9:15

730-4 Vessel Size and the Outcome of DCA

Gregory C. Robertson, Tomoaki Hinohara, Matthew R. Selmon, James W. Vetter, Bruce J. McAuley, Dennis J. Sheehan, Richard Prokopchak, William O. Suddath, Jacqueline H. Lee, Lissa J. Braden, John B. Simpson. *Sequoia Hospital and the Pacific Foundation for Cardiovascular Research, Redwood City, CA*

The purpose of this study is to evaluate the relationship between vessel size and outcome of directional coronary atherectomy (DCA). Patients who underwent DCA for lesions in native coronary arteries were included. Reference vessel size was quantitatively measured using a computer assisted system. Based on reference vessel size (VS), lesions were categorized in 5 groups: VS 2.0 (<2.25 mm), VS 2.5 (2.25–2.75 mm), VS 3.0 (2.75–3.25 mm), VS 3.5 (3.25–3.75 mm) and VS 4.0 (≥3.75 mm). The outcome of DCA was as follows:

	VS 2.0	VS 2.5	VS 3.0	VS 3.5	VS 4.0	p
Lesions	242	357	303	187	146	
Acute outcome						
VDR	0.96	1.20	1.39	1.58	1.88	<0.009
DCA success	93%	92%	93%	91%	95%	n.s.
Perforation	0.4%	0.3%	0.3%	0%	0.7%	n.s.
CABG	1.2%	2.8%	3.0%	4.3%	1.4%	n.s.
Tissue (mg)	12.5	13.9	14.2	18.0	14.7	<0.001
% residual	14%	14%	14%	19%	19%	<0.001
Restenosis (6 month)						
Primary	53%	47%	38%	24%	20%	<0.001
Restenosed	57%	49%	39%	34%	28%	0.03

VDR: Vessel device ratio

In conclusion, the outcome of DCA was not significantly influenced by vessel size in selected cases. Despite a trend toward a higher residual stenosis, the restenosis rate was significantly lower in groups with a larger vessel size.

9:30

730-5 Why Do Aorto-Ostial Lesions Behave Differently than Non-ostial Lesions? Histologic Findings in Directional Atherectomy Specimens of Aorto-Ostial vs. Non-ostial Lesions

Mun K. Hong, Christian C. Haudenschild, Alexey Tjurmin, Kenneth M. Kent, Martin B. Leon. *Washington Hospital Center, Washington, DC; American Red Cross, Rockville, MD*

Conventional angioplasty of aorto-ostial lesions (≤3 mm from aorta) is frequently associated with suboptimal results, high procedural complications, and increased restenosis rate compared to non-ostial lesions. To gain insight into the differences between aorto-ostial and non-ostial lesions, directional atherectomy (DCA) samples of *de novo* native aorto-ostial lesions from 32 patients (64 ± 11 years; 22 men) were compared to randomly selected DCA samples of *de novo* native non-ostial lesions from 34 patients (61 ± 11 years; 23 men). *Results:* (1) The amount of tissue removed was similar between the two groups (6.4 ± 3.6 μm^2 vs. 6.2 ± 3.8 μm^2), with predominantly fibrosclerotic plaque (59% vs. 68%): (2) The aorto-ostial group had significantly more areas of high cellularity vs. non-ostial group (0.73 ± 0.74 μm^2 vs. 0.41 ± 0.49 μm^2; $p < 0.05$): (3) The aorto-ostial group tended to contain more thrombus (0.61 ± 0.79 μm^2 vs. 0.29 ± 0.35 μm^2; $p < 0.08$); and (4) the aorto-ostial DCA samples more frequently had adventitial tissue (0.10 ± 0.14 μm^2 vs. 0.04 ± 0.06 μm^2; $p = 0.07$). *We conclude that:* (1) The aorto-ostial lesions seem to experience greater spontaneous trauma and stimulus for proliferation, as evidenced by the more abundant reactive cellular component. This histologic confirmation of the known rheologic effect on aorto-ostial regions may explain the increased restenosis rate observed with these lesions.: (2) The aorto-ostial lesions are more unstable, with a trend for more thrombotic component. This may explain the high procedural complications during angioplasty of the aorto-ostial lesions.: and (3) DCA specimens from the aorto-ostial lesions tended to have greater amount of adventitia, another potential source for procedural complication and increased restenosis. These findings suggest that there are biologic explanations for observed suboptimal acute and chronic results after angioplasty of aorto-ostial lesions, and further suggest a need for an improved strategy, such as minimization of the aorto-ostial turbulent flow possibly with stenting combined with local pharmacologic treatment.

9:45

730-6 Histopathologic Findings in Ostial Coronary Lesions Treated with Directional Atherectomy

Jonathan D. Bier, Sunit Mukherjee, Ramin Ebrahimi, Andrew P. Chodos, David Gagnon, Kathleen Horton, Alice K. Jacobs. *Boston University Medical Center, Boston, MA*

Conventional balloon angioplasty has had limited success in treating patients with ostial coronary stenoses. Directional coronary atherectomy (DCA) has been used in this setting with improved results. We hypothesized that this difference in device outcome is the result of differences in ostial lesion histopathology. Accordingly, we compared quantitative histopathology on tissue obtained from DCA in pts with ostial (n = 21) and non-ostial (n = 160) coronary stenoses. The % area occupied by adventitia, media, fibrocellular, sclerotic, and atheromatous tissue and new or old thrombus was calculated using computerized planimetry of appropriately stained specimens. Pts with ostial lesions were less likely to be hypertensive (29% vs 56%, $p < 0.05$) and tended more often to be female (43% vs 26%, $p = 0.09$). In addition, pts with ostial lesions were less likely to have angiographic evidence of thrombus (0% vs 20%, $p < 0.05$) or plaque ulceration (5% vs 29%, $p < 0.05$). Reference segment diameter was similar in both groups. All pts with ostial lesions had successful DCA procedures. The histopathology (% total specimen area) is shown:

	Ostial	Non-Ostial	P Value
Adventitia	1.7 ± 2.8	0.3 ± 1.2	<0.001
Media	8.0 ± 15.6	2.3 ± 5.5	<0.01
Fibrocellular	50 ± 33	34 ± 25	<0.01
Sclerotic	49 ± 34	62 ± 25	<0.05
Atheromatous	15 ± 24	29 ± 25	<0.05
New thrombus	8 ± 16	13 ± 19	NS
Old thrombus	11 ± 19	9 ± 18	NS

Thus, DCA of ostial lesions more commonly yields deep tissue elements compared to non-ostial lesions. In addition, ostial lesions are more cellular with a reduced content of sclerotic and atheromatous plaque. Given the high success rate of DCA in this group, it is possible that ostial plaque composition is ideally suited to DCA. These findings suggest that ostial lesions have a different histopathology which may be relevant to device selection.

731 Vascular Remodelling, Outcomes and Crossover to CABG

Tuesday, March 21, 1995, 8:30 a.m.–10:00 a.m.
Ernest N. Morial Convention Center, Room 90

8:30

731-1 Contemporary PTCA for Acute Coronary Ischemia: Results in Women Match Those of Men

David O. Williams, Bruce Thompson, Eugene Braunwald, Genell L. Knatterud, Barry L. Sharaf, Peter H. Stone. *Rhode Island Hospital, Brown University, Providence, Rhode Island*

Prior reports have demonstrated an unfavorable safety and efficacy profile of PTCA for women with coronary disease compared to men. To determine if such a gender difference exists for patients with acute coronary ischemic syndromes treated with contemporary medical therapy, the results of PTCA performed routinely or according to clinical course in 294 men and 150

	Male % (mean)	Female % (mean)	p-value
Age (yrs)	(57.4)	(63.2)	0.000
Never Smoked	24.1	44.0	0.000
Prior MI	35.7	30.0	0.229
Hypertension	32.1	53.7	0.000
Abnormal ECG	93.2	94.7	0.547
LV EF	(58.7)	(61.2)	0.040
Multivessel CAD	42.9	37.0	0.277
LAD Culprit Site	42.6	43.9	0.806
Stenosis Pre	(83.4)	(82.6)	0.533
Stenosis Post	(25.3)	(24.5)	0.726
TIMI Flow Grade Pre	(2.4)	(2.6)	0.007
TIMI Flow Grade Post	(2.9)	(3.0)	0.184
Angiographic Success	95.9	96.4	0.823
Complication at 42 Days			
Death	1.4	1.3	0.981
MI	5.4	6.7	0.606
Stroke	0.3	0.0	0.474
CABG	4.1	1.3	0.116
Death/MI/Stroke/CABG	8.5	9.3	0.774